SKLAR EXPLORATION COMPANY, LLC

CASTLEBERRY OIL AND GAS FIELD, AREA 2

CONECUH COUNTY, ALABAMA

FACILITY NO.: 103-0026

MAJOR SOURCE OPERATING PERMIT
SECOND TITLE V RENEWAL

CONTENTS

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STATEMENT OF BASIS

The proposed Title V Major Source Operating Permit (MSOP) first renewal is issued under the provisions of ADEM Admin. Code r. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans, and other documents attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

Per ADEM Rule 335-3-16-.12(2), an application for permit renewal shall be submitted at least six (6) months, but not more than eighteen (18) months, before the date of expiration of the permit. The renewal application was due on July 2, 2016. The application was received at the Department on June 20, 2016. The proposed MSOP will expire on ????, 2023.

PROJECT DESCRIPTION

The following additions and modifications will be made to the existing permit:

- All potential wells listed in the existing MSOP that were not drilled should be deleted, along with the undrilled potential well sites in Air Permit 103-0026-X004.
- Add one potential well site, identified as the 28-NW Well, to the permit during this renewal. This well will replace one of the undrilled generic wells currently located in this section and is included in the existing permit. If Sklar should choose to drill at the physical location of the previously permitted generic well, an Air Permit should be obtained.
- Add one (1) 46 HP gas compressor engine to the MSOP. This engines was permitted on July 19, 2016 under Air Permit 103-0026-X005. The engine will be located at the Craft-Soterra 27-6 well and will be used to compress and transport natural gas from a well through the gathering lines to the processing facility for processing and sales.
- The Craft-Pugh 10-11 Well, which was permitted on November 12, 2013, should be removed from this permit renewal. This well was plugged and abandoned.

FACILITY HISTORY

Sklar Exploration Company, LLC Area 2 was initially permitted on January 3, 2012. The Castleberry Oil and Gas Field is part of the Little Cedar Creek Field, named by the State of Alabama Oil & Gas Board. This area was initially permitted under Air Permit No. 103-0026-X001 on June 13, 2008. In September 2010, wells were added to this area and these additions resulted in an exceedance of the major source threshold for criteria pollutants. Sklar Exploration Company, LLC Area 2 was issued the initial Title V permit on January 3, 2012.

PROCESS DESCRIPTION

Process No.1: Oil & Gas Extraction:

Oil and sour gas flow from each well into a low-pressure separator. After the separator, the gas goes to the sour gas flare or to the nearby gas plant. Any liquid leaving the separator pass through the heater treater, which separate the oil and water, and flow into the four (4) storage tanks located at each well site. A Vapor Recovery Unit (VRU) is unit to capture any vapors from the tanks. These vapors are sent to either the onsite flare or the gas plant. An electric power oil pump is used to pump oil from one of the tanks back into the ground to facilitate the extraction process.

Process No.2: Oil Extraction:

The oil extraction process is similar to that of the Oil & Gas extraction process in Process 1. In the event that the gas plant is offline or the well site is not connected to the gas plant via pipeline, these wells are equipped with the necessary equipment to produce oil. Both separated gas and captured tank vapors are routed to the flare in this process.

Each well site is equipped with one (1) heater treater, one (1) flare, one (1) saltwater storage tank, one (1) power oil storage tank, and two (2) crude oil storage tanks. A 46 HP compressor engine would be located at two (2) at both the Craft-Soterra 27-6 and Craft-Soterra 27-2 well sites.

FACILITY-WIDE REQUIREMENTS

Emission Point	Description	Pollutant	Emission Limit	Regulations
Petroleum Production Facility that handles gas or refinery gas containing 0.10 grains of H_2S/Scf		H_2S	Burn gas 20 ppbv offsite	Rule 335-3-5-.03(1) Rule 335-3-5-.03(2)
Facility-wide Emissions **All Emission Sources in Area 2**		SO_2	$\leq$ 245 Tons/12 consecutive months	Rule 335-3-14-.04 [Anti-PSD]
		NO_X	$\leq$ 245 Tons/12 consecutive months	Rule 335-3-14-.04 [Anti-PSD]
		CO	$\leq$ 245 Tons/12 consecutive months	Rule 335-3-14-.04 [Anti-PSD]
		VOC	$\leq$ 245 Tons/12 consecutive months	Rule 335-3-14-.04 [Anti-PSD]

STATE REGULATIONS

Applicability:

ADEM Admin. Code r. 335-3-5-.03(1) and (2), "*Petroleum Production*"

This regulation applies to the control of sulfur compound emissions from each petroleum production facility that handles natural gas or refinery gas that contains more than 0.10 grains of hydrogen sulfide (H_2S) per standard cubic foot (Scf). ADEM Admin. Code r. 335-3-5-.03 (2), requires that this gas be burned so that the offsite concentration does not exceed 20 parts per billion volume (ppbv). Compliance with this regulation will be met by routing sour gas, not sent to the processing plant, to the facility's flare for combustion.

Applicability:

ADEM Admin. Code r. 335-3-14-.04 "*Prevention of Significant Deterioration (PSD) Permitting*"

Sklar has requested a 245 TPY facility-wide limit for criteria pollutants from emission sources located at Area 2 in order to maintain emissions below the major source threshold and be considered a minor source with respect to PSD regulations.

Applicability:

ADEM Admin. Code r. 335-3-16-.03, "*Major Source Operating Permits*"

The Sklar Area 2 Wells have the potential to emit greater than 100 tons per year of criteria pollutants; therefore, this area would be a major source of criteria pollutants. The wells in this area are not expected to emit 10 TPY or more of a single hazardous air pollutant (HAPs), or 25 TPY or more of a combination of HAPs nor are they expected to be major for greenhouse gas emissions.

FEDERAL REGULATIONS

Applicability:

40 CFR 60 Subpart A, "*General Provisions"*

Sklar Area 2 would be subject to the applicable requirements of this subpart because Area 1 is subject to an applicable subpart in 40 CFR Part 60.

Applicability:

40 CFR 60 Subpart OOOO, "Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced after August 23, 2011, and on or before September 18, 2015"

This regulation applies to oil and gas production facilities with affected facilities that commence construction, modification or reconstruction after August 23, 2011 and on or before September 18, 2015. None of the existing affected emission sources at this facility would be affected by

this regulation since they were constructed prior to that date. The newly proposed well would not be subject to this rule because it would be constructed after the date range of applicability.

Applicability:

40 CFR 60 Subpart OOOOa, "*Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commence After September 18, 2015"*

This regulation applies to oil and gas production facilities with affected facilities that commence construction, modification, or reconstruction on or after September 18, 2015. The proposed, generic well site (28-NW) would be constructed after this applicability date; therefore, the generic well would be subject to the applicable requirements of this rule.

Reciprocating Compressor Affected Facility: Per §60.5365a(c), a reciprocating compressor affected facility "is a single reciprocating compressor. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart"; therefore, the 28-NW well site would not be classified as a reciprocating compressor affected facility.

Collection of Fugitive Emissions at a Well Site Affected Facility: "Except as provided in §60.5365a(i)(2), the collection of fugitive emissions components at a well site, as defined in §60.5430a, is an effected facility… (2) a well site that only contains one or more wellheads is not an affected facility under this subpart. The affected facility status of a separate tank battery surface site has no effect on the affected facility status of a well site that only contains one or more wellheads." This well site contains more than "one or more wellheads"; therefore, the proposed well site would be subject to the collection of fugitive emissions at a well site affected facility requirements, as applicable.

Storage Vessel Affected Facility: Per §60.5365a(e), a storage vessel affected facility "is a single storage vessel with the potential for VOC emissions equal to or greater than 6 TPY." The storage vessels located at the 28-NW Well Site have the potential to emit 6 TPY or greater of VOCs; therefore, the well site would be considered a storage vessel affected facility. However, if the facility is required to recover or burn gas in the well flare by legally and practically enforceable limits in an operating permit established under a state authority [§60.5365a(e)], reducing potential VOC emissions, the storage vessel affected facility requirements would not apply. However, per the definition of "fugitive emissions component" in §60.5430a, both thief hatches or other openings and covers or closed-vent systems will be considered part of the collection of fugitive emissions components because the tanks are exempt as affected facilities.

Emission Standards:

Collection of Fugitive Emission at a Well Site Affected Facility:

- Must reduce GHG (in the form of methane) and VOC emissions by complying with the requirements in §60.5397a.

Compliance and Performance Test Methods and Procedures:

The well site must be in compliance with the applicable standards of this subpart no later than August 2, 2016 or upon startup, whichever is later. At all times, the affected facility and any related air pollution control equipment should be maintained and operated in a manner that minimizes emissions.

Collection of Fugitive Emission at a Well Site Affected Facility:

- Initial compliance with the applicable standards should be demonstrated as outlined in §60.5410a(j) [§60.5410a(j)].

Emission Monitoring:

Collection of Fugitive Emission at a Well Site Affected Facility:

- All fugitive emissions components must be monitored as required in §60.5430a as well as in accordance with §60.5397a(b)-(g) [§60.5397a(a)].
- Fugitive emissions sources should be repaired as outlined in §60.5397a(h) [§60.5397a(a)].

Reporting and Recordkeeping Requirements:

Collection of Fugitive Emission at a Well Site Affected Facility:

- Annual reports should be submitted for each collection of fugitive emissions component that includes the information outlined in §60.5420a(b)(7) [§60.5397a(j)].

FACILITY-WIDE EMISSIONS

Facility-wide potential/allowable emissions were obtained from the Title V renewal application.

Potential/Allowable Facility Wide Emissions for Area 2						
(TPY)						Metric TPY
$PM_{2.5}/PM_{10}$	**SO_2**	**NO_X**	**CO**	**VOC**	**HAPs**	**CO2e**
1.260	245	245	245	245	27.561	78,365.462

FACILITY FLARE REQUIREMENTS

Emission Point	Description	Pollutant	Emission Limit	Regulations
Flare located at each well site		H_2S	Burn gas with 0.10 grains/Scf AND 20 ppbv offsite concentration	Rule 335-3-5-.03(1) Rule 335-3-5-.03(2)
		Opacity	No more than one 6 min avg. > 20% AND No 6 min avg. > 40%	Rule 335-3-4-.01(1)(a) Rule 335-3-4-.01(1)(b)

STATE REGULATIONS

Applicability:

ADEM Admin. Code r. 335-3-4-.01, "*Visible Emissions*" for Control of Particulate Emissions

Each well flare would be subject to the requirements of this subpart since sour gas is burned in the flares.

Emission Standards:

The flares would be required to meet the 20/40% opacity standard as outlined in ADEM Admin. Code r. 335-3-4-.01(1)(a) and (b).

Compliance and Performance Test Methods and Procedures:

A visible emission observation (VEO) shall be conducted on each flare according to either EPA Method 9 or Method 22 found in 40 CFR 60, Appendix A.

Emission Monitoring:

Opacity monitoring is conducted when a sour gas stream is sent to the flare and when personnel are present to conduct the emissions monitoring. A daily visual inspection shall be conducted to determine if there are any visible emissions from the flares. If visible emissions are observed in excess of the opacity standards, a VEO shall be conducted.

Recordkeeping and Reporting Requirements:

Records of daily visual inspections conducted on each flare for visible emissions shall be maintained and should include the date, time, duration, and results of each inspection. Records of each VEO conducted on a flare shall be maintained and should include date, time, person

conducting the observation, any corrective action taken, and the VEO report if EPA Method 9 is used.

Applicability:

ADEM Admin. Code r. 335-3-5-.03(1) and (2), *"Petroleum Production"*

This regulation applies to facilities that handle natural gas or refinery gas that contains more than 0.10 grains of hydrogen sulfide (H_2S) per standard cubic foot (Scf). Any stream containing H_2S at a concentration greater than this threshold would be subject to the requirements of this rule.

Emission Standards:

The gas stream must be properly burned in order to maintain the ground level concentrations of H_2S to less than twenty (20) parts per billion beyond plant property limits averaged over a thirty (30) minute period.

Compliance and Performance Test Methods and Procedures:

The H_2S concentration of the sour gas stream routed to the well flares should be analyzed using the Tutwiler procedures in 40 CFR Q60.648, the chromatographic analysis procedures in ASTM E-260, the stain tube procedures in GPA 2377-89, or procedures provided by the stain tube manufacturer.

Emission Monitoring:

There is no required monitoring outlined in this regulation; however, the facility will be required to sample the H_2S concentration of each sour gas stream sent to the flare at each well site on a semi-annual basis.

Recordkeeping and Reporting Requirements:

Periodic Monitoring Reports (PMR) shall be submitted to the Department semi-annually on a calendar basis within 30 days of the end of the reporting period. Periodic Monitoring Reports should include all incidences of deviation from permit provisos including deviations that occur during startup and shutdown.

Applicability

ADEM Admin. Code r. 335-3-14-.04, *"Prevention of Significant Deterioration (PSD) Permitting"*

Sklar has requested a facility-wide PSD limit of 245 TPY in order to remain below the PSD major source threshold. The facility has proposed a potential well in this permit renewal, but the flare located at this potential well site would not cause a significant increase in emissions.

Emission Standards:

Sulfur dioxide (SO_2), nitrogen oxide (NO_X), carbon dioxide (CO), and volatile organic compound (VOC) emissions the Area 2 Wells shall not exceed 245 TPY during any consecutive 12-month period.

Compliance and Performance Test Methods and Procedures:

The H_2S concentration of the sour gas stream that is routed to the well flares should be analyzed using the Tutwiler procedures found in §60.648, the chromatographic analysis procedures that are found in ASTM E-260, the stain tube procedures found in GPA 2377-89, or those provided by the stain tube manufacturer. The results of sampling are used to determine SO_2 emissions since SO_2 emissions from the flare cannot be measured directly.

The sour gas stream molecular weight, VOC content, and heat content from each of the flares should be determined using either the ASTM Analysis Method D1826-77, chromatographic analysis procedures in 40 CFR 60 Appendix A, Method 18, or any equivalent method or procedure.

Emission Monitoring:

The sour gas stream from the Area 2 Well sites shall be tested semi-annually for its H_2S content and quarterly for its molecular weight, Btu heat content, and VOC content. Monitoring should consist of calculating the monthly emissions from the flares using the results from well sampling.

Recordkeeping and Reporting Requirements:

Monthly records of the volume of gas burned in the flare (MScf/Month), sour gas stream heat input (MMBtu/hr), stream H_2S geed rate (lbs/month), flare H_2S feed rate (lbs/month), sour gas stream H_2S concentration (mol%), VOC content, Btu content (Btu/Scf), and the gas molecular weight (lb/lb-mol) shall be maintained in order to demonstrate that the 245 TPY anti-PSD limit for NO_X, CO, VOC, and SO_2 have not been exceeded.

Periodic Monitoring Reports (PMR) identifying deviations from any permit proviso or condition, including incidences during startup or shutdown, shall be submitted to the Department. The PMR report shall be submitted semi-annually on a calendar basis within 30 days of the end of the reporting period.

Applicability:

ADEM Admin. Code r. 335-3-16-.03, *"Major Source Operating Permits"*

The well sites located in Area 2 are subject to this rule; therefore the flares are subject to the applicable requirements of this subpart.

FEDERAL REGULATIONS

Applicability:

40 CFR 64, *"Compliance Assurance Monitoring (CAM)"*

Each well flare is subject to the requirements of this regulation because it meets all of the following criteria: it is subject to an emission limit or standard, a control device is used to achieve compliance with the emission limit or standard, and pre-controlled emissions are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. [40 CFR §64.2(a)].

The flares are used as control device to comply with the work practice requirement to burn process gas containing 0.10 grains H_2S/Scf. The pre-controlled emissions from the flares are also expected to be greater than the major source threshold; therefore, the flares are subject to this regulation.

Emission Standards:

Each flare should maintain the presence of a spark or flame at the flare tip anytime a sour gas stream may be sent to the flare.

Compliance and Performance Test Methods and Procedures:

Visual inspection of the flare shall be made from the location that provides the best view of the flare tip and/or flare pilot light of flare igniter.

Emission Monitoring:

CAM is met by equipping the flare tips with a continuous sparking flame igniter, with a continuous burning pilot light, or by conducting a visual observation. A visual observation of each flare for the presence of a flame or spark at the flare tip shall be conducted daily if a continuous sparking flame igniter or continuous burning pilot light is not used. The daily visual observation performed to comply with ADEM Admin. Code r. 335-3-4-.01 may coincide with the daily visual observation required by CAM.

Recordkeeping and Reporting Requirements:

If daily visual inspection are performed for the flares, records of the date, time, and results of the inspection and any corrective action taken shall be maintained.

If a flame igniter or pilot flame monitor is used to verify the presence of a spark or flame, records of the date, time, and results of each calibration shall be maintained.

Records of the date, time, and corrective actions shall be maintained for each occurrence when there was not a spark or flame present at the flare tip should be sent to the flare.

FLARE EMISSIONS

The expected emissions from the Area 2 flares are listed in the table below.

Flare Emissions – Area 2 Wells						
Source ID	(TPY)					**CO_{2e}** (Metric TPY)
	$PM_{2.5}/PM_{10}$	**SO_2**	**NO_X**	**CO**	**VOC**	
2702A (Craft-Soterra 27-2)	0.012	0.018	3.787	5.227	4.266	1,919.888
2706A (Craft-Soterra 27-6)	0.012	0.018	3.787	5.227	4.266	1,919.88
2712A (Craft-Smurfit-Stone 27-12)	0.012	0.018	3.787	5.227	4.266	1,919.88
2816A (Craft-Ralls 28-16)	0.012	0.018	3.787	5.227	4.266	1,919.88
3307A (Craft-Ralls 33-7)	0.012	0.018	3.787	5.227	4.266	1,919.88
3314A (Craft Ralls 33-14)	0.012	0.018	3.787	5.227	4.266	1,919.88
0402A (Craft-Ralls 4-2 #1-A)	0.012	0.018	3.787	5.227	4.266	1,919.88
0405A (Craft-Ralls 4-5 #1-GI)	0.012	0.018	3.787	5.227	4.266	1,919.88
0412A (Craft-Ralls 4-12 #1)	0.012	0.018	3.787	5.227	4.266	1,919.88
28-NW	0.012	0.018	3.787	5.227	4.266	1,919.88
Total Flare Emissions	**0.120-**	**0.180**	**37.865**	**206.032**	**38.397**	**17,278.995**

PROCESS HEATER REQUIREMENTS

Emission Point	Description	Pollutant	Emission Limit	Regulations
Area 2 Heater Treaters	0.5 MMBtu/hr Gas Fired Heater Treaters	SO2	4.0 lbs/MMBtu	Rule 335-3-5-.01(1)(a)
		PM	0.5 lbs/MMBtu	Rule 335-3-4-.03(2)
		NO_X	NONE	
		CO	NONE	
		VOC	NONE	
		Opacity	No more than on 6 min avg > 20% AND	Rule 335-3-4-.01(1)(a)
			No 6 min avg > 40%	Rule 335-3-4-.01(1)(b)

The following sections discuss the process heaters' applicability to state and federal regulations.

STATE REGULATIONS

Applicability:

ADEM Admin. Code r. 335-3-4-.01, *"Visible Emissions"* for Control of Particulate Emissions

Each process heater would be subject to the applicable requirements of this regulation. These units would burn either natural gas or propane as a fuel source. The particulate emissions resulting from these fuel sources are expected to be negligible; therefore, no daily opacity monitoring would be required.

Applicability:

ADEM Admin. Code r. 335-3-4-.03(2), *"Fuel Burning Equipment"* for Control of Particulate Emissions

This rule applies to fuel burning equipment in Class II Counties. Conecuh County is a Class II County; therefore, the process heaters would be subject to the applicable requirements of this rule.

Emissions Standards:

Particulate matter (PM) emissions shall not exceed the allowable as determined by the following equation:

$$E = [3.109] * [H^{-0.589}]$$

Where E = emissions [lbs/MMBtu] and H = Heat Input [MMBtu/hr].

Compliance and Performance Test Methods and Procedures:

If testing is required, PM emissions shall be determined by using Method 5 of 40 CFR 60, Appendix A.

Emission Monitoring:

Based on the renewal application, PM emissions from the heaters are expected to be negligible; therefore, no PM monitoring would be required.

Recordkeeping and Reporting Requirements:

No recordkeeping or reporting would be required for the heaters in regards to this regulation.

Applicability:

ADEM Admin. Code r. 335-3-5-.01(1)(b), *"Fuel Combustion"*

This rule limits sulfur dioxide (SO_2) emissions from fuel burning equipment located in Class II Counties. Conecuh County is a Class II County; therefore, the process heaters would be subject to the applicable requirements in this rule. This rule limits SO_2 emissions to 4.0 lbs/MMBtu. Since sweetened natural gas and propane would be the fuel sources for the process heaters, the SO_2 emissions are expected to be negligible; therefore, no SO_2 monitoring is required for the process heaters.

Applicability:

ADEM Admin. Code r. 335-3-14-.04, "*Prevention of Significant Deterioration (PSD) Permitting"*

Sklar has requested a facility-wide PSD limit of 245 TPY in order to remain below the PSD major source threshold. A new potential well is proposed in this renewal, but the heater treater located at this potential well site would not cause a significant increase in emissions.

Applicability:

ADEM Admin. Code r. 335-3-16-.03, *"Major Source Operating Permits"*

This rule classifies sources that do not have the potential to emit more than 5 TPY of criteria pollutants as insignificant as long as they are not subject to a NSPS, NESHAP, or MACT.

The proposed process heaters are not subject to any NSPS, NESHAP, or MACT because they are not steam generating units. Therefore, the process heaters located at the wells would be considered insignificant.

FEDERAL REGULATIONS

Applicability:

40 CFR 64, *"Compliance Assurance Monitoring (CAM)"*

The process heaters are required to comply with a PM and SO_2 emissions standard but are not equipped with a control device and are not expected to exceed a major source threshold. Therefore, the heaters would not be subject to the requirements of this subpart.

PROCESS HEATER EMISSIONS

Process Heater Potential Emissions						
Source ID	(TPY)					**CO_{2e}** Metric TPY
	$PM_{2.5}/PM_{10}$	**SO_2**	**NO_X**	**CO**	**VOC**	
Heater Treater located at each well site	0.016	0.001	0.215	0.180	0.012	256.251

ENGINE REQUIREMENTS

Emission Point	Description	Pollutant	Emission Limit	Regulations
Existing Stationary Spark Ignition (SI) RICEs < 500 HP at Area Source HAPs (40 CFR 63 Subpart ZZZZ)				
2706B (Craft-Soterra 27-6)	46 HP Compressco 460, 4SRB, SI, Power Oil Pump Engine	Opacity	No more than one 6 min avg. > 20% AND No 6 min avg. > 40%	Rule 335-3-4-.01(1)(a) Rule 335-3-4-.01(1)(b)

The following sections discuss the engines' applicability to state and federal regulations.

STATE REGULATIONS

Applicability:

ADEM Admin. Code r. 335-3-4-.01, *"Visible Emissions"* for Control of Particulate Emissions

This regulation is applicable to engines located at the Area 2 Wells because they burn natural gas as their primary fuel source. Particulate matter (PM) emissions from natural gas fired engines are expected to be negligible; however, if visible emissions are observed in excess of the 20/40% opacity standards, a visible emissions observation (VEO) shall be conducted using EPA Method 9 or Method 22.

Applicability:

ADEM Admin. Code r. 335-3-14-.04, *"Prevention of Significant Deterioration (PSD) Permitting"*

The facility has requested a facility-wide PSD limit of 245 TPY in order to maintain below the PSD major threshold. A new engine was added at Area 2 in June 2016. This addition of this engine would not cause a significant increase in emissions; therefore, no PSD review is required.

Applicability:

ADEM Admin. Code r. 335-3-16-.03, *"Major Source Operating Permits"*

Sklar Area 2 is a major source of criteria pollutants; therefore, the engines are subject to the applicable requirements of this rule.

FEDERAL REGULATIONS

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

Applicability:

40 CFR 60 Subpart A, *"General Provisions"*

The engine is subject to an applicable subpart under 40 CFR 60; therefore, the engine would be subject to the requirements of this subpart. The applicable requirements are outlined in Table 3 of Subpart JJJJ.

Applicability:

40 CFR 60 Subpart JJJJ, *"New Source Performance Standards for Stationary Spark Ignition (SI) Internal Combustion Engines"*

The proposed engine is a spark ignition (SI), 46 HP, 4-stroke rich burn (4SRB) reciprocating internal combustion engine located at an area source of HAPs. This engine is classified in 40 CFR 63 Subpart ZZZZ as a new engine that would be subject to the requirements of 40 CFR 60 Subpart JJJJ; therefore, the proposed engine is subject to the applicable requirements of this subpart.

Emission Standards:

There are no numerical emission standards for this engine.

Compliance and Performance Test Methods and Procedures:

There are no numerical emission standards for this engine; therefore, there are no compliance or performance requirements for this engine.

Emission Monitoring:

There are no numerical emission standards; therefore, there are no emission monitoring requirements.

Reporting and Recordkeeping:

All maintenance conducted on the engine should be documented. If the engine is certified, documentation from the manufacturer that the engine is certified to meet an emission standard is required; if the engine is not certified, documentation proving the engine meets the standards is required.

Applicability:

40 CFR 64, *"Compliance Assurance Monitoring (CAM)"*

The proposed engine is required to comply with either a work practice standard or an emission standard; however, none of the engines are equipped with a control device in order to achieve those standards and the emissions from these engines would not exceed the major source threshold. Therefore, the proposed engine would not be subject to the requirements of this subpart.

ENGINE EMISSIONS

A 46 HP compressor engine was permitted for the Craft-Soterra 27-6 Well site in June 2016. The uncontrolled potential emissions from the engines are provided in the table below. These emissions were based off of AP-42 emission factors, manufacturer's data, and material balances.

Expected Engine Emissions							
Source ID	TPY						Metric TPY
	PM	**SO_2**	**NO_X**	**CO**	**VOC**	**HAPS**	**CO_{2e}**
Craft-Soterra 27-6	0.015	0.001	7.317	8.272	0.240	0.033	188.601
Total Engine Emissions	**0.015**	**0.001**	**7.317**	**8.272**	**0.240**	**0.033**	**188.601**

STORAGE TANK REQUIREMENTS

Emission Point	Description	Pollutant	Emission Limit	Regulations
Tanks located at each well site	**(2) 16,800 Gallon Crude Oil (1) 16,800 Gallon Saltwater 21,000 Gallon Power Oil**	H_2S	Burn Gas with 0.10 grains/Scf AND 20 ppbv offsite concentration	Rule 335-3-5-.03(1)

The following sections discuss the storage tank's applicability to state and federal regulations.

STATE REGULATIONS

Applicability:

ADEM Admin. Code r. 335-3-5-.03(1) and (2), *"Petroleum Production"*

This rule applies to facilities that handle natural gas or refinery gas that contains more than 0.10 grains H_2S/Scf. If the vapors from the storage tank contain more than the allowable 0.10 grains H_2S/Scf, the vapors must be routed to a vapor recovery unit (VRU) and closed vent system to the flare or to the sales pipeline. Venting to the atmosphere shall not occur for more than 15 consecutive minutes during de-pressurizing, when emptying the storage tanks, and when reduced pressure will not allow flow of the process stream to the combustion device. Records of venting incidents occurring for greater than 15 minutes shall be maintained. No emissions monitoring or testing is required for the tanks.

Applicability:

ADEM Admin. Code r. 335-3-6-.01, "*Control of Organic Emissions"*

The storage tanks are not expected to have VOC emissions greater than 100 TPY; therefore, the storage tanks would not subject to this rule.

Applicability:
ADEM Admin. Code r. 335-3-16-.03, *"Major Source Operating Permits"*

This rule classifies sources that do not have the potential to emit more than 5 TPY of criteria pollutants as insignificant as long as the unit is not subject to any NSPS, NESHAP, or MACT.

The proposed storage tanks are not subject to any federal regulation and are not expected to emit more than 5 TPY per unit; therefore, the storage tanks located at the Area 2 Wells would be considered insignificant.

FEDERAL REGULATIONS

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

Applicability:
40 CFR 60 Subpart A, *"General Provisions"*

The storage tanks are not subject to any applicable regulation under this subpart; therefore, the storage tanks are not subject to the requirements of this subpart.

Applicability:
40 CFR 60 Subpart Kb, *"Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Storage Vessels)"*

Per §60.110b(a), storage vessels constructed, reconstructed or modified after July 23, 1984 with a capacity greater than or equal to 75 m^3 (~19,813 gallons) that are used to store volatile organic liquids (VOL) are subject to the applicable requirements of this rule. The two (2) 21,000 gallon power oil storage tanks located at the Odom 24-14 and ATIC 23-8 Wells would be subject to this rule because they meet the capacity requirement. However, vessels with a design capacity less than or equal to 1,589.874 m^3 (~420,000 gallons) used for petroleum or condensate stored, processed, or treated prior to custody transfer are not subject to this rule. The tanks located at all Area 2 well sites would not be subject to this rule because each of the tanks have a volume less than 420,000 gallons.

Applicability:
40 CFR 64, *"Compliance Assurance Monitoring (CAM)"*

The tanks at the Area 2 well sites are equipped with vapor recovery units in order to comply with the standard to burn sour gas. The emissions from the tanks are not expected to exceed the major source threshold; therefore, the tanks would not be subject to the requirements of this regulation.

STORAGE TANK EMISSIONS

Storage tank emissions were supplied by the facility and calculated using the EPA Tanks program.

	Uncontrolled Tank VOC Emissions (TPY)
Area 2 Tanks	**10.45**

RECOMMENDATIONS

Based on my analysis, I recommend that Sklar Exploration Company be issued its 1st Title V Renewal for Major Source Operating Permit No. 103-0026 for the Castleberry Oil & Gas Field Area No. 2 site. The facility should be able to meet the applicable state and federal regulations.

Marla K. Smith
Industrial Minerals Section
Energy Branch
Air Division

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Draft Date

APPENDIX A

CAM PLAN FOR WELLSITE FLARES

Each Emergency Flare

Monitoring Approach	*Compliance Assurance Monitoring [CAM]*	Periodic Monitoring
I. Indicator	**Operate flare with a flame present at all times when a process gas stream may be sent to the flare**	**Total well flare emissions**
A. Measurement Approach	The flare tip shall be equipped with a continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation.	Rach flares' gas volume shall be monitored with a system capable or measuring and recording the flow rate and/or the parameters utilized for flow rate calculation or estimated utilizing material balances, computer simulations, special testing, etc.
II. Indicator Ranges	**Presence of a flame at flare tip**	**The total facility emissions for any criteria pollutant on a tons per 12 month basis, calculated monthly, shall not exceed 245 TPY.**
	A deviation is defined as when there was no flame present at the flare tip when a process gas stream was vented to the flare. A deviation triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR Part 64.7(d) and reporting within 48 hours or two work days.	A deviation is defined as when the rolling 12-month average of any criteria pollutant exceeds 245 TPY for the facility, including flare emissions. A deviation triggers an immediate inspection, corrective action, and reporting within two work days. Exceeding 225 TPY of any criteria pollutant for the facility, including well emission, is not a deviation but triggers a report to the Department within two work days indication how the Permittee intends to avoid exceeding the 245 TPY limit the next month.
A. QIP Threshold	If the accumulated hours of deviation events occurring exceeds 5% of the flare's operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.	Not applicable.
III. Performance Criteria		
A. Data representativeness	The flame monitor shall be located at the flare tip and focused on the area where gas exits the flare tip.	Flare gas volume monitors shall be located immediately upstream of each flare and material balances shall be performed utilizing this.

Each Emergency Flare

Monitoring Approach	**Monitoring Approach**	**Monitoring Approach**
	Visual observations shall be made from the location that provides the best view of the flare tip and/or flare pilot lights or flare igniter.	Provided multiple streams share a common flare, the flare gas volume monitor may be placed at this point.
B. Verification of Operational Status	Not applicable.	Not applicable.
C. QA/QC Practices & Criteria	The flame monitor shall be maintained and calibrated in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, or at least annually, whichever is more frequent.	Each volume monitor shall be calibrated at a frequency in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, or at least annually, whichever is more frequent.
	Repairs and/or replacements shall be made immediately when non-functioning or damaged parts are found.	If the flare gas volume monitor fails its calibration tests, the volume monitor shall be taken out of service until repairs and/or replacements
D. Monitoring frequency	Pilot flame shall be monitored either continuously with a thermocouple or daily with visual inspections if operating staff is on site.	Flare gas production volumes shall be monitored continuously.
Data Collection Procedure	Record time, date, and duration of each incident of when no flame was present at the flare tip when a process gas stream was sent to the flare.	Record: Daily
	Record time, date, and results of each visual observation.	Well gas flared volume [Mscf/day]
	Record time date, and results of each calibration.	Total gas volume sold [Mscf/day]
	Record: Each occurrence:	Record: Each Occurrence
	Date and results of each inspection and corrective actions taken.	Date and results of each inspection and corrective actions taken
Averaging Period	Instantaneous	Daily

Each Emergency Flare

Monitoring Approach	*Periodic Monitoring*
I. **Indicator**	**Opacity**
A. Measurement Approach	Provided the flare is being utilized to burn a gas stream other than the pilot light fuel gas stream, a daily visual emission observation on the flare shall be undertaken. Duration of each observation shall be >= 15 minutes and <= 60 minutes. Each observation shall be conducted with either Method 9 of 40 CFR Part 60 or Method 22 of 40 CFR Part 60.
II. **Indicator Range**	(1) No more than one 6-min. average opacity reading shall exceed 20% or (2) No 6-min. average opacity reading shall exceed 40%; or (3) The accumulated time of observed visible emissions shall not exceed 12 minutes. A deviation is defined as anytime the observed 6-min. average opacity exceeds 20% for the 2nd time, or 40% for the 1st time, when utilizing Method 9. A deviation is defined as anytime the accumulated time in which visible emissions were observed exceeds 12 minutes per observation when utilizing Method 22. A deviation trigger continued visible emissions observations at a frequency suitable to defining the duration of the visible emission deviation event. One observation shall be undertaken to establish the end of the visible emission deviation event. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two (2) work days.
III. **Performance Criteria**	
A. **Monitoring Frequency**	Daily
Data Collection Procedure	Record: Daily Each 15 second observation reading Record: Each occurrence – Time, date, and results or corrective actions taken
Averaging Period	6 minutes